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IN THE CLAIMS:

Please cancel Claims 1, 2, 17, 20, 34-50, 57, and 61. Please amend Claims 3, 4, 9, 18, 21, 22, 58, 62, 65, 67, 69, and 75 as follows:

1-2. (cancelled)

3. (currently amended) ~~The A semiconductor processing apparatus according to Claim 3 comprising:~~

a housing defining a processing chamber therein, said processing chamber being adapted to support a semiconductor substrate therein; and  
means for applying a first energy to a non-device side of the semiconductor substrate and for applying a pulse energy to a device side of the semiconductor substrate wherein the intensity of the first energy is less than said pulse energy, and the duration of the pulse energy is less than the duration of the first energy to control the depth of the junctions formed by impurities implanted in the semiconductor substrate and control the diffusion of the impurities through the substrate, wherein the duration of said pulse energy is in a range of about 100 milliseconds to 400 milliseconds.

4. (currently amended) The semiconductor processing apparatus according to Claim 3 ~~[[1]]~~, wherein said means for applying comprises a first energy source and a second energy source, said first energy source for applying said first energy to the non-device side of the semiconductor substrate, and said second energy source for applying said pulse energy to the device side of the substrate.

5. (original) The semiconductor processing apparatus according to Claim 4, wherein said first energy source generates a peak energy at a wavelength in a range of about 0.2 microns to 3.0 microns.

6. (original) The semiconductor processing apparatus according to Claim 5, wherein said first energy source comprises at least one tungsten halogen lamp.

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7. (original) The semiconductor processing apparatus according to Claim 6, wherein said first energy source comprises a plurality of tungsten halogen lamps.

8. (original) The semiconductor processing apparatus according to Claim 7, wherein each of said lamps has a longitudinal extent, said longitudinal extents of a first group of lamps being generally parallel with the non-device side of the semiconductor substrate and being positioned at a first spacing from the non-device side of the semiconductor substrate and aligned over a perimeter region of the substrate to heat the perimeter region of the semiconductor substrate, said first group of heating lamps defining a first heating zone, a second group of said lamps positioned at a second spacing from the non-device side of the semiconductor substrate and positioned to extend across the substrate to heat a central region of the semiconductor substrate, said second group defining a second heating zone, and wherein said first spacing is less than said second spacing to create a varying temperature profile which is applied to the non-device side of the substrate.

9. (currently amended) The A semiconductor processing apparatus according to Claim 4 comprising:

a housing defining a processing chamber therein, said processing chamber being adapted to support a semiconductor substrate therein; and

means for applying a first energy to a non-device side of the semiconductor substrate and for applying a pulse energy to a device side of the semiconductor substrate wherein the intensity of the first energy is less than said pulse energy, and the duration of the pulse energy is less than the duration of the first energy to control the depth of the junctions formed by impurities implanted in the semiconductor substrate and control the diffusion of the impurities through the substrate, wherein said means for applying comprise a first energy source and a second energy source, said first energy source for applying said first energy to the non-device side of the semiconductor substrate, and said second energy source for applying said pulse energy to the device side of the substrate, wherein said second energy source generates a peak energy at a wavelength in a range of about 0.2 microns to 0.9 microns.

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10. (original) The semiconductor processing apparatus according to Claim 9, wherein said second energy source comprises at least one lamp chosen from a tungsten halogen lamp and a xenon lamp.

11. (original) The semiconductor processing apparatus according to Claim 9, wherein said second energy source comprises at least one lamp tungsten halogen lamp.

12. (original) The semiconductor processing apparatus according to Claim 11, wherein said second energy source comprises a plurality of tungsten halogen lamps.

13. (original) The semiconductor processing apparatus according to Claim 11, further comprising a filter, said filter absorbing energy from said second energy source having a wavelength greater than about 0.7 microns.

14. (original) The semiconductor processing apparatus according to Claim 13, said filter absorbing energy from said second energy source having a wavelength greater than about 0.9 microns.

15. (original) The semiconductor processing apparatus according to Claim 13, wherein said filter comprises a fluid cooled filter.

16. (original) The semiconductor processing apparatus according to Claim 10, wherein each of said lamps has a longitudinal extent, said longitudinal extents of a first group of lamps being generally parallel with the device side of the semiconductor substrate, said first group of heating lamps defining a first heating zone, a second group of said lamps being generally parallel to the device side of the substrate, said second group defining a second heating zone, and wherein said first group and said second group are independently controlled to selectively energize said lamps.

17. (cancelled)

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18. (currently amended) The semiconductor processing apparatus according to Claim [[17]]  
21, further comprising means for rotating the substrate during processing.

19. (original) The semiconductor processing apparatus according to Claim 18, wherein said  
means for rotating is adapted to rotate the substrate in a range of about 5 rpm to 300 rpm.

20. (cancelled)

21. (currently amended) ~~The A semiconductor processing apparatus according to Claim 20,~~  
~~wherein said pulse energy has a duration comprising:~~

a housing defining a processing chamber therein, said processing chamber  
being adapted to support a semiconductor substrate therein;

a first energy source for directing energy to a non-device side of the  
semiconductor substrate; and

a second energy source for directing pulse energy to a device side of the  
semiconductor substrate wherein the intensity of the energy directed from said first energy  
source is less than said second energy source and the duration of the applied pulse energy is  
in a range of about 100 milliseconds to 400 milliseconds to control the depth of the junctions  
formed by impurities implanted in the semiconductor substrate and control the diffusion of  
the impurities through the substrate.

22. (currently amended) The semiconductor processing apparatus according to Claim [[20]]  
21, wherein said first energy source generates a peak energy at a wavelength in a range of  
about 0.2 microns to 3.0 microns.

23. (original) The semiconductor processing apparatus according to Claim 22, wherein said  
second energy source generates a peak energy at a wavelength in a range of 0.2 microns to  
0.90 microns.

24. (original) The semiconductor processing apparatus according to Claim 23, wherein said  
first energy source comprises at least one tungsten halogen lamp.

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25. (original) The semiconductor processing apparatus according to Claim 24, wherein said first energy source comprises a plurality of tungsten halogen lamps.

26. (original) The semiconductor processing apparatus according to Claim 25, wherein each of said lamps has a longitudinal extent, said longitudinal extents of a first group of lamps being generally parallel with the non-device side of the semiconductor substrate and being positioned at a first spacing from the non-device side of the semiconductor substrate and aligned over a perimeter region of the substrate to heat the perimeter region of the semiconductor substrate, said first group of heating lamps defining a first heating zone, a second group of said lamps positioned at a second spacing from the non-device side of the semiconductor substrate and positioned to extend across the substrate to heat a central region of the semiconductor substrate, said second group defining a second heating zone, and wherein said first spacing is less than said second spacing to create a varying temperature profile which is applied to the non-device side of the substrate.

27. (original) The semiconductor processing apparatus according to Claim 26, wherein said second energy source generates a peak energy at a wavelength in a range of about 0.2 microns to 0.9 microns.

28. (original) The semiconductor processing apparatus according to Claim 27, wherein said second energy source comprises at least one lamp chosen from a tungsten halogen lamp and a xenon lamp.

29. (original) The semiconductor processing apparatus according to Claim 26, wherein said second energy source comprises at least one lamp tungsten halogen lamp.

30. (original) The semiconductor processing apparatus according to Claim 29, wherein said second energy source comprises a plurality of tungsten halogen lamps.

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31. (original) The semiconductor processing apparatus according to Claim 29, further comprising a filter, said filter absorbing energy from said second energy source having a wavelength greater than about 0.7 microns.

32. (original) The semiconductor processing apparatus according to Claim 31, said filter absorbing energy from said second energy source having a wavelength greater than about 0.9 microns.

33. (original) The semiconductor processing apparatus according to Claim 31, wherein said filter comprises a fluid cooled filter.

34-50. (cancelled)

51. (previously presented) The semiconductor processing apparatus according to Claim 4, wherein said second energy source comprises at least one lamp having a normal operating condition generating a normal output spectrum and a normal peak operating voltage, said lamp adapted to apply a high energy voltage to the device side, said high energy voltage exceeding said normal peak operating voltage, and when applying said high energy voltage said lamp generating a shifted output energy spectrum whereby said lamp generates a peak energy voltage at a shorter wavelength than said normal peak operating voltage.

52. (previously presented) The semiconductor processing apparatus according to Claim 51, wherein said shifted output energy spectrum generates an output energy over a range of about 0.2 microns to 0.9 microns.

53. (previously presented) The semiconductor processing apparatus according to Claim 51, wherein said lamp comprises a tungsten halogen lamp.

54. (previously presented) The semiconductor processing apparatus according to Claim 53, wherein said tungsten halogen lamp generates a normal peak operating voltage of about 208 VAC.

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55. (previously presented) The semiconductor processing apparatus according to Claim 53, wherein said high energy voltage comprises a voltage of about 480 VAC.

56. (previously presented) The semiconductor processing apparatus according to Claim 51, wherein said lamp applies said high energy voltage as a pulse of high energy voltage.

57. (cancelled)

58. (currently amended) The semiconductor processing apparatus according to Claim 4, wherein said second energy source comprises at least one lamp having a normal operating condition generating a normal output spectrum and a normal peak operating voltage, said lamp adapted to apply said pulse energy, said pulse energy comprising a pulse of high energy voltage to the device side, said pulse of high energy voltage and exceeding said normal peak operating voltage and having a duration in a range of about 100 milliseconds to 400 milliseconds.

59. (previously presented) The semiconductor processing apparatus according to Claim 58, wherein said lamp generates a shifted output energy spectrum when applying said pulse of high energy voltage whereby said lamp generates a peak energy voltage at a shorter wavelength than said normal peak operating voltage.

60. (previously presented) The semiconductor processing apparatus according to Claim 58, wherein said lamp generates a shifted output energy spectrum over a range of about 0.2 microns to 0.9 microns.

61. (cancelled)

62. (currently amended) ~~The A~~ semiconductor processing apparatus ~~according to Claim 61~~ comprising:

a processing chamber adapted to support a semiconductor substrate therein;

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a first energy source adapted for applying a first energy to a non-device side of the semiconductor substrate to heat the non-device side of the substrate to a reference temperature; and

a second energy source adapted for applying a second energy to a device side of the semiconductor substrate to heat the device side to a heat activation temperature, said second energy source applying said second energy for an activation period sufficient to activate impurities in the substrate so that they become part of the lattice structure of the substrate while minimizing diffusion of the impurities across the substrate, and said reference temperature being less than said heat activation temperature to reduce the temperature gradient in the substrate to minimize stress in the substrate, wherein said second energy source is adapted to heat the device side of the substrate to a depth in a range of about 1 to 5 micrometers to control the depth of the junctions formed by impurities implanted in the semiconductor substrate.

63. (previously presented) The semiconductor processing apparatus according to Claim 62, wherein second energy source is adapted to apply said second energy over a duration in a range of about 1 microsecond to 2 seconds.

64. (previously presented) The semiconductor processing apparatus according to Claim 63, wherein said duration is in a range of about 100 milliseconds to 400 milliseconds.

65. (currently amended) ~~The~~ A semiconductor processing apparatus ~~according to Claim 61~~ comprising:

a processing chamber adapted to support a semiconductor substrate therein;  
a first energy source adapted for applying a first energy to a non-device side of the semiconductor substrate to heat the non-device side of the substrate to a reference temperature; and

a second energy source adapted for applying a second energy to a device side of the semiconductor substrate to heat the device side to a heat activation temperature, said second energy source applying said second energy for an activation period sufficient to activate impurities in the substrate so that they become part of the lattice structure of the



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substrate while minimizing diffusion of the impurities across the substrate, and said reference temperature being less than said heat activation temperature to reduce the temperature gradient in the substrate to minimize stress in the substrate, wherein said first energy source generates a peak energy at a wavelength in a range of about 0.2 microns to 3.0 microns.

66. (previously presented) The semiconductor processing apparatus according to Claim 65, wherein said second energy source generates a peak energy at a wavelength in a range of about 0.2 microns to 0.9 microns.

67. (currently amended) The semiconductor processing apparatus according to Claim ~~[[61]]~~ 62, wherein said first energy source comprises at least one tungsten halogen lamp.

68. (previously presented) The semiconductor processing apparatus according to Claim 67, wherein said first energy source comprises a plurality of tungsten halogen lamps.

69. (currently amended) ~~The A semiconductor processing apparatus according to Claim 61 comprising:~~

a processing chamber adapted to support a semiconductor substrate therein;  
a first energy source adapted for applying a first energy to a non-device side of the semiconductor substrate to heat the non-device side of the substrate to a reference temperature; and

a second energy source adapted for applying a second energy to a device side of the semiconductor substrate to heat the device side to a heat activation temperature, said second energy source applying said second energy for an activation period sufficient to activate impurities in the substrate so that they become part of the lattice structure of the substrate while minimizing diffusion of the impurities across the substrate, and said reference temperature being less than said heat activation temperature to reduce the temperature gradient in the substrate to minimize stress in the substrate, wherein said second energy source comprises at least one lamp chosen from a tungsten halogen lamp and a xenon lamp.

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70. (previously presented) The semiconductor processing apparatus according to Claim 69, wherein said second energy source comprises at least one tungsten halogen lamp.

71. (previously presented) The semiconductor processing apparatus according to Claim 70, wherein said second energy source comprises a plurality of tungsten halogen lamps.

72. (previously presented) The semiconductor processing apparatus according to Claim 70, wherein said lamp has a normal operating condition generating a normal energy spectrum and a normal peak voltage, said lamp being adapted to apply a high energy voltage to the device side, and said high energy voltage being greater than said normal peak voltage.

73. (previously presented) The semiconductor processing apparatus according to Claim 72, wherein said lamp generates a shifted energy spectrum when applying said high energy voltage, said shifted energy spectrum shifts to a lower wavelength range than said normal energy spectrum.

74. (previously presented) The semiconductor processing apparatus according to Claim 72, wherein said high energy voltage is about 480 VAC, and said normal peak voltage is about 208 VAC.

75. (currently amended) ~~The A~~ semiconductor processing apparatus according to Claim 61, further comprising:

a processing chamber adapted to support a semiconductor substrate therein;

a first energy source adapted for applying a first energy to a non-device side of the semiconductor substrate to heat the non-device side of the substrate to a reference temperature;

a second energy source adapted for applying a second energy to a device side of the semiconductor substrate to heat the device side to a heat activation temperature, said second energy source applying said second energy for an activation period sufficient to activate impurities in the substrate so that they become part of the lattice structure of the substrate while minimizing diffusion of the impurities across the substrate, and said reference

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temperature being less than said heat activation temperature to reduce the temperature gradient in the substrate to minimize stress in the substrate; and

a filter, said filter absorbing energy from said second energy source having a wavelength greater than about 0.9 microns.

76. (previously presented) The semiconductor processing apparatus according to Claim 75, said filter absorbing energy from said second energy source having a wavelength greater than about 0.7 microns.

77. (previously presented) The semiconductor processing apparatus according to Claim 75, wherein said filter comprises a fluid cooled filter.